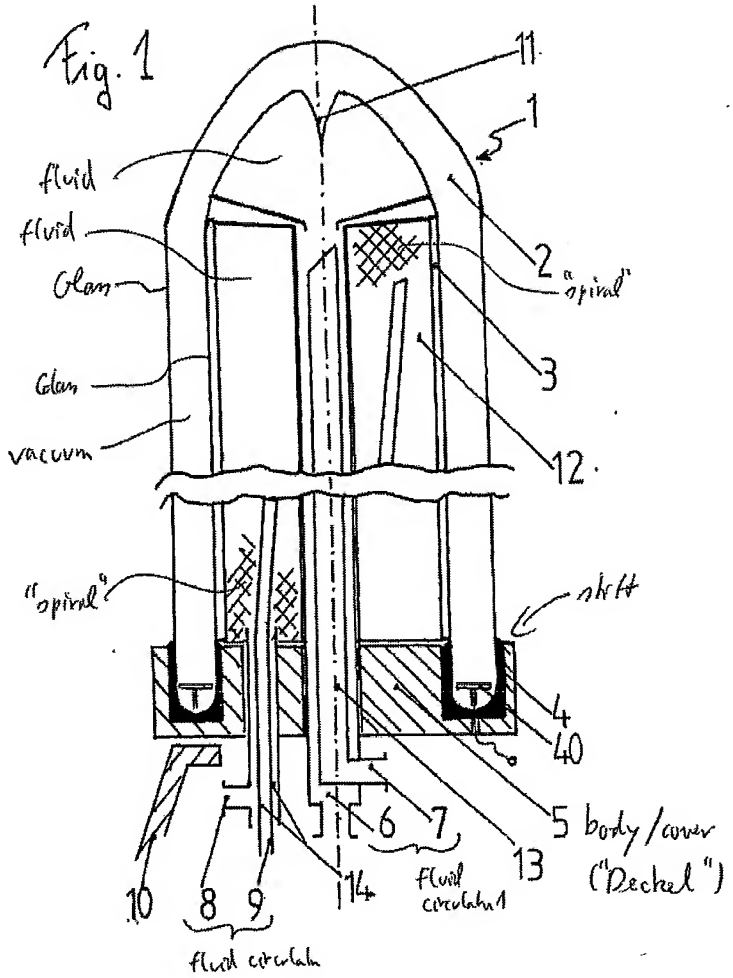
REMARKS

Claims 9 and 15-18 were pending in this application. Independent claim 9 has been amended to clarify that the vacuum tube is a glass tube (to emphasize the fragility thereof, as discussed below), that the outer wall of the fluid-conducting pipe system is connected to a distributor frame (the distributor frame having been added to the preamble in the context of a solar collector having the distributor frame and a plurality of heat exchangers, as shown in FIG. 3), and that the vacuum tube is resiliently connected to the distributor frame via the prestressed heat-conducting elements. No claims have been added or cancelled. No new subject matter is believed to have been added by these amendments. Therefore, claims 9 and 15-18 remain in this application.

35 U.S.C. § 103 Rejections

Claims 9 and 15-18 stand rejected under 35 U.S.C. § 103(a) for obviousness over U.S. Patent No. 4,440,156 to Takeuchi et al. in view of DE 198 59 658 to Helmut et al. and further in view of U.S. Patent No. 6,619,283 to Ghela.

On page 7 of the Office Action, the Examiner asserts that the Helmut patent "teaches a heat exchanger (figs 1, 2a (1)) having a vacuum tube (2) wherein: an outer wall of a fluid-conducting pipe (13) system is centered concentric to the inner wall of the vacuum tube (2), employing a counterflow heat exchange flow configuration, and each heat-conducting element (3) extends in a spiral shape along a cross- section of the heat exchanger covers an angle of at least 450 degrees (as apparent in fig 2a)". Applicant wishes to address the foregoing via reference to the annotated FIG. 1 of the Helmut patent (see next page). Specifically, in the Helmut patent, there is an "inner", central fluid circulation 6 and 7, but there is also an "outer" fluid circulation 8 and 9 (i.e., in the area where the spiral is located). The purpose of the spiral (covered with the absorber) in the Helmut apparatus is to improve the efficiency of heat transfer itself. The outer glass-vacuum-glass structure exists to isolate the central lumen. There is no absorber in this outer vacuum area.



The Examiner asserts that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Takeuchi, as taught by Helmut. Applicant respectfully disagrees at least on the basis of the function of the spiral-shaped heat-conducting element. Specifically, the spiral-shaped heat conducting element (a) has the effect of improving the heat transfer from the outer absorber to the (sole) inner fluid room; and (b) holds the entire device based on the central metal piping. In FIG. 3 of the present application, the pipes 11 are holding the glass structure (i.e., the outer glass-vacuum-glass structure). This structure is not connected to the collector housing 14. Therefore, vibrations or touching the outer glass tube does not

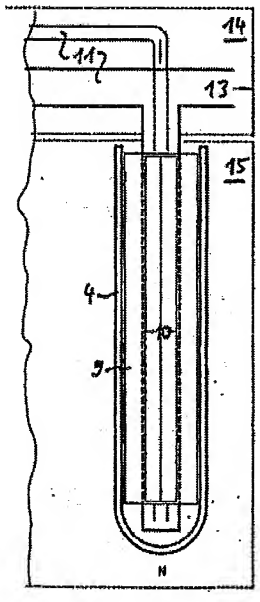


Fig.3

meet a hard resistance, but rather, allows for resilient movement against the prestress of the spiral.

In contrast, the Helmut apparatus fails to provide this feature, as there is the rigid body 5 holding the outer glass tubes as well as the inner metal tube (this is the central lower body 5, mentioned as "Deckel" (cover) 5 in column 3, lines 22 to 27). Further, the Takeuchi patent does not indicate how the metal pipes are attached outside the collector, but it is known for someone skilled in the art that the pipes (shown on the right hand side of FIG. 1 of the Takeuchi patent, below) are attached to a frame.

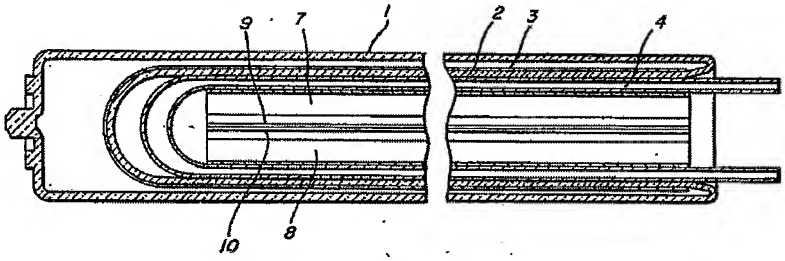


FIG. 1

It can then be appreciated that the outer and the inner glass tube are directly "applied" on the metal pipes. This provides for no "play" if the pipes are contacted too roughly, for example, such as via hailstones, thereby resulting in breakage of the tubes. Thus, the objective of the present invention is not met by the Examiner's suggested structural combination.

Additionally, the Examiner asserts that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Takeuchi, as taught by Ghela. However, notwithstanding the foregoing arguments made with respect to Helmut and Takeuchi, the teachings of Ghela also fail to address the object of the present invention. FIGS. 1 to 4 show the collector with the features as cited by the Examiner. FIG. 5 shows an intrinsic locking tab configuration and FIGS. 6 and 7 show a bracket arrangement to hold the device of FIGS. 1 to 5 (i.e., there is no "play" between the structure holding the pipes and the frame).

FIG. 5

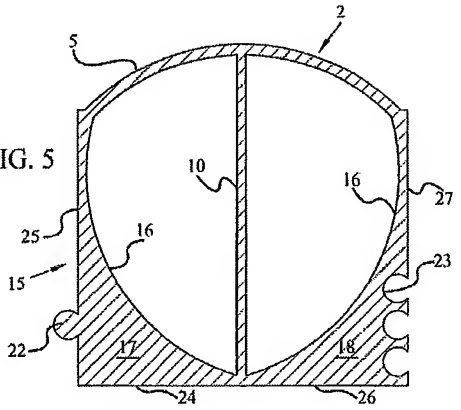
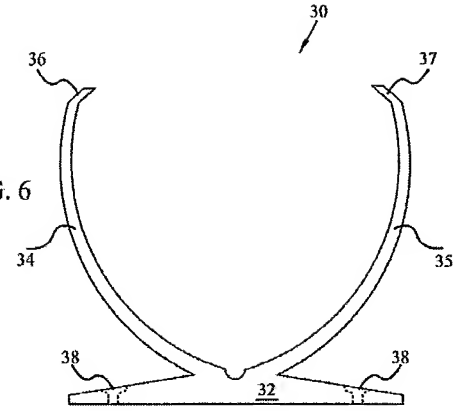


FIG. 6



Accordingly, the teachings of the Helmut, Takeuchi, and Ghela references, either alone or in combination do not provide all of the features and functionality of the claimed invention, as has now been identified above and further clarified in amended claim 9. Thus, Applicant respectfully submits that amended independent claim 9 is not rendered obvious by Helmut in view of Takeuchi and further in view of Ghela. Reconsideration of the rejections of claim 9 is respectfully requested. Claims 15-18 depend from and add further limitations to amended independent claim 9 and are believed to be patentable for the reasons discussed hereinabove in connection with amended independent claim 9.

CONCLUSION

Based on the foregoing amendments and remarks, reconsideration of the rejections and allowance of pending claims 9 and 15-18 are respectfully requested.

Respectfully submitted,

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